Press to start

第十四小隊

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今天有個任務要指派給鬼殺隊
最近有個東西叫「YouTube」似乎蠻奇怪的
需要你們去了解一下

任務的目標就是
1.調查何種影片受歡迎
2.調查影片收入的高低


我會給你們幾個提示去完成這個任務
以下是任務提示

資料集介紹

前處理

EDA

特徵工程

模型建立

人物情報

第一話

資料集介紹

きめつのやいば
鬼滅之刃
YouTube篇

資料集介紹

資料來源

爬台灣資料

資料時間

11/10-12/25

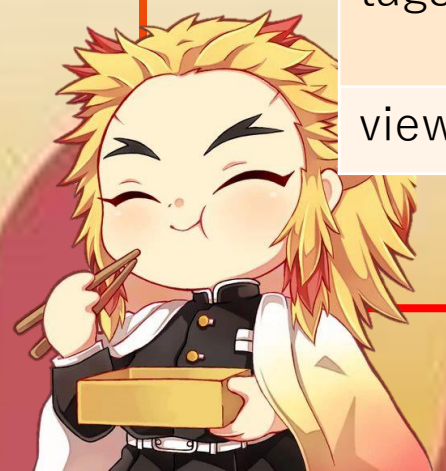
資料筆數

1617筆資料
22個欄位

就讓我先來介紹資料集吧！

資料集介紹

資料欄位-透過Youtube API			
Video_id	影片ID	likes	喜歡數
Trending_date	發燒日期	dislikes	倒讚數
title	影片標題	Comment_count	評論數
Channel_title	頻道標題	Thumbnail_link	影片縮圖連結
Category_id	類別ID	Comments_disabked	是否允許評論
Publish_time	影片發佈時間	Rating_disables	是否允許評分
tags	標籤	Video_erroe_or_removed	影片錯誤或移除
views	觀看數	description	影片描述



第二話

前處理

きめつのやいば
鬼滅之刃
YouTube篇

欄位新增

原欄位	轉換後
tags	Tag_count
description	Desc_length
Trending_date	Trending_day

新增欄位	
income	廣告收入 (views/1000)*cpm
Tag_count	標籤數量
Desc_length	影片描述字數
Trending_day	發燒天數
Like_ratio	喜歡比(likes/dislikes)

將原本欄位轉換成數值資料

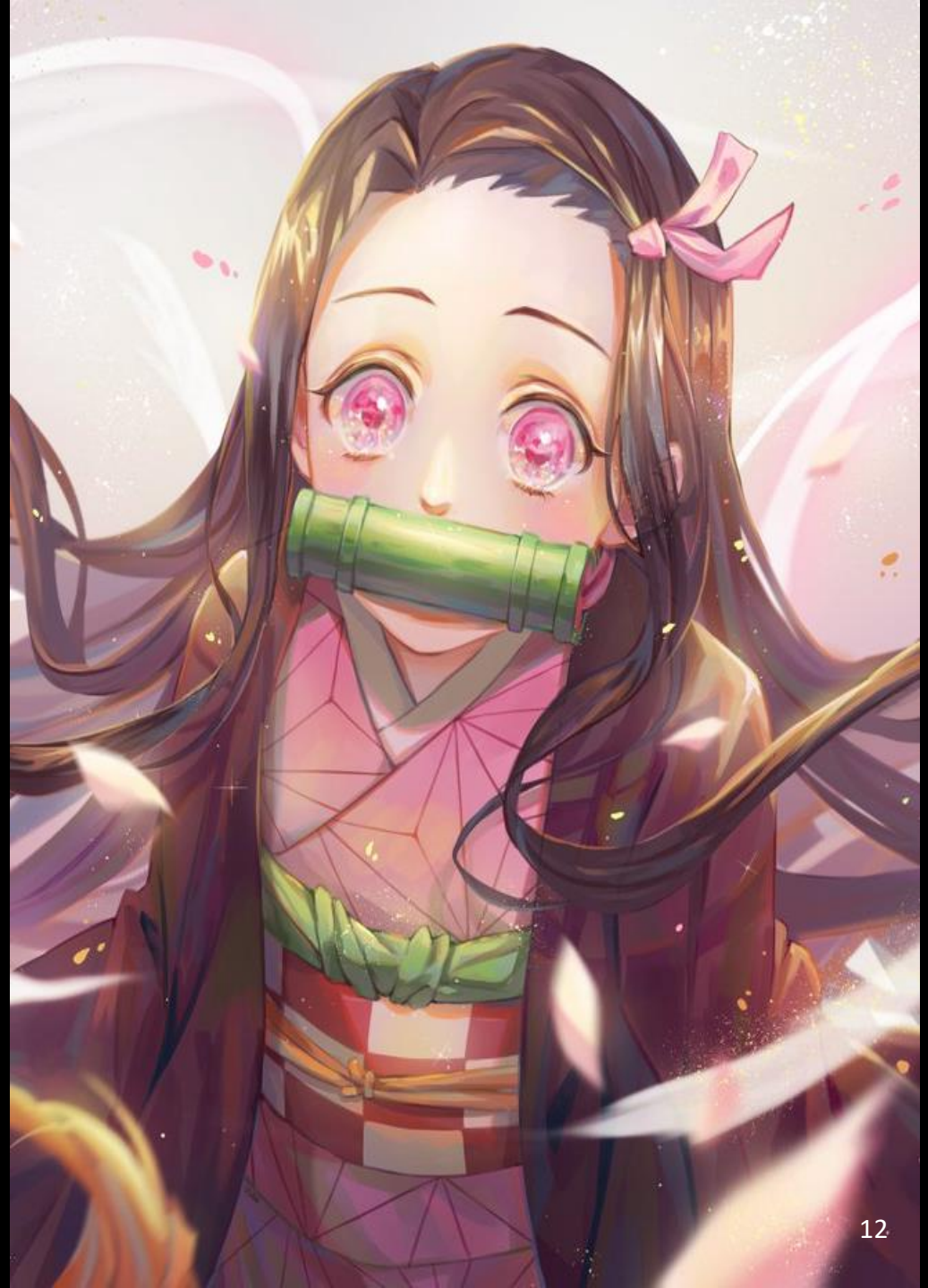
欄位新增

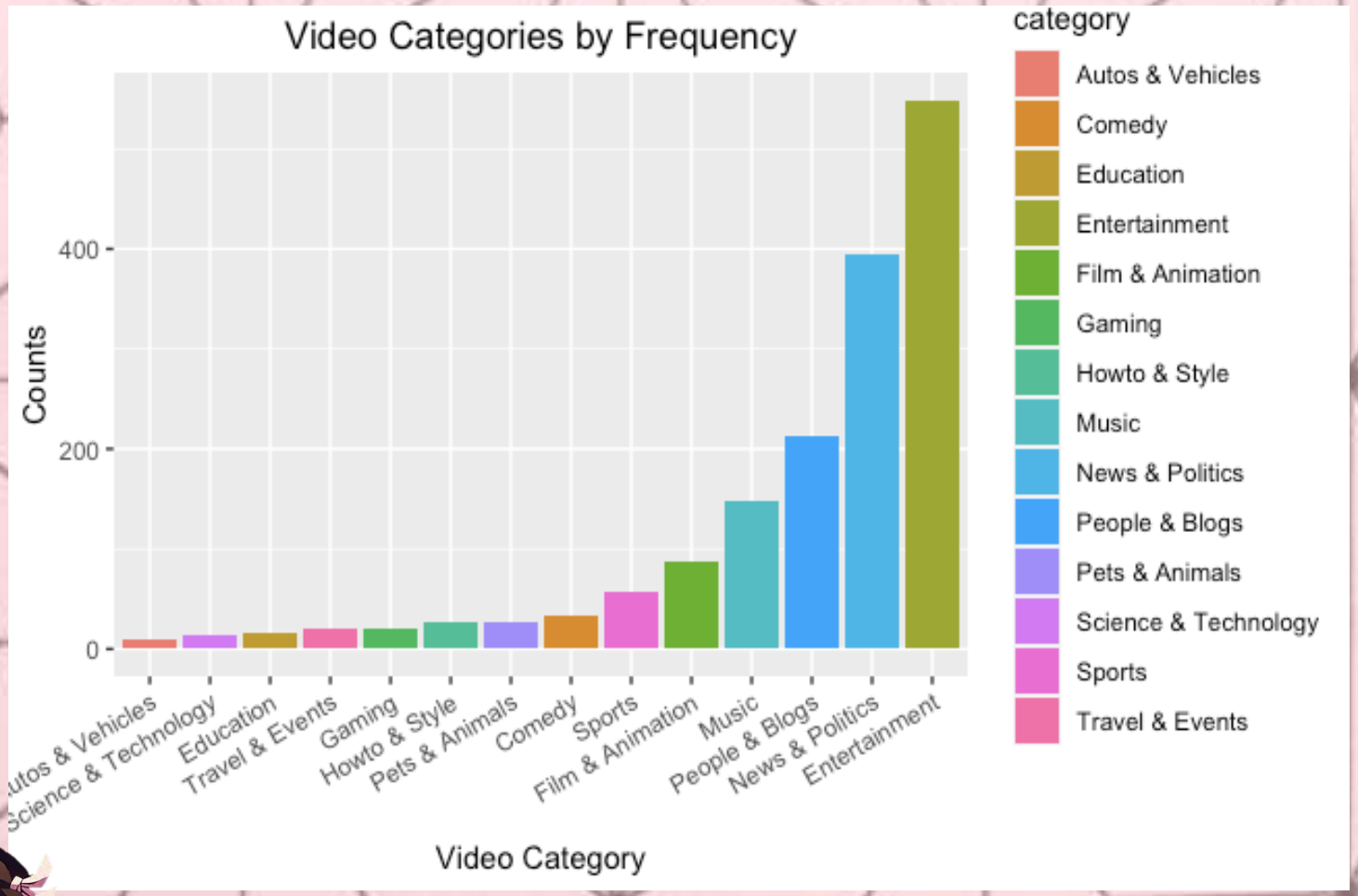
trending_date	tags	description
2020/12/25	大胃王|大胃	喜歡看我吃
2020/12/6	TWICE|I CA	Provided to Y
2020/12/7	BIGHIT|<U+	BTS (<U+BC
2020/12/16	hamtaro gasa	By - Zaty Far
2020/12/12	<U+C5E0><U	[IZ*ONE On
2020/11/20	Sports|SSU|大	本賽事為本
2020/12/2	大政治大爆	#大新聞大爆
2020/12/10	全明星運動	【射箭、排
2020/12/15	這群人|TGO	遠親不如近

income	tag_count	desc_length	trending_day	duration
80.417	74	223	1	1394
1241.50219	2	523	6	206
104918.03	6	1384	17	231
816.89689	37	1519	6	226
1436.90252	59	272	4	269
9.35563	10	756	3	6121
278.86055	67	146	10	3081
870.03937	9	396	16	5792
933.60774	42	1603	14	885
44.09719	10	779	7	762
305.26718	9	122	7	1002

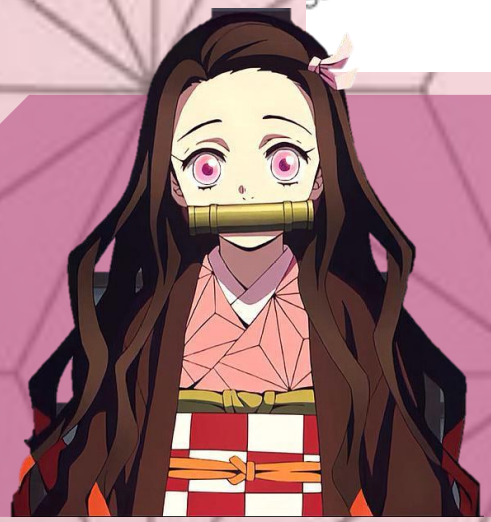
第三話

EDA



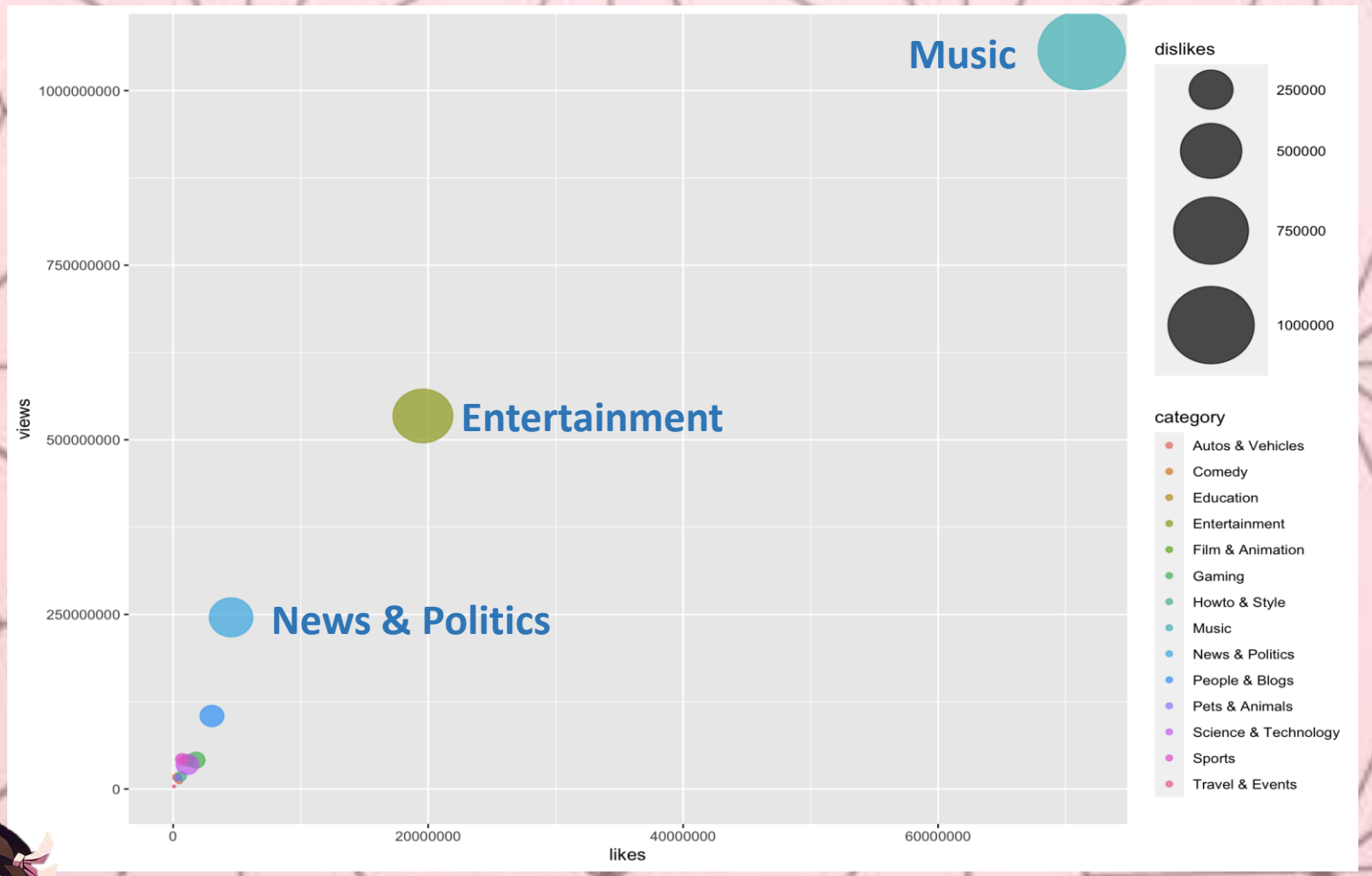


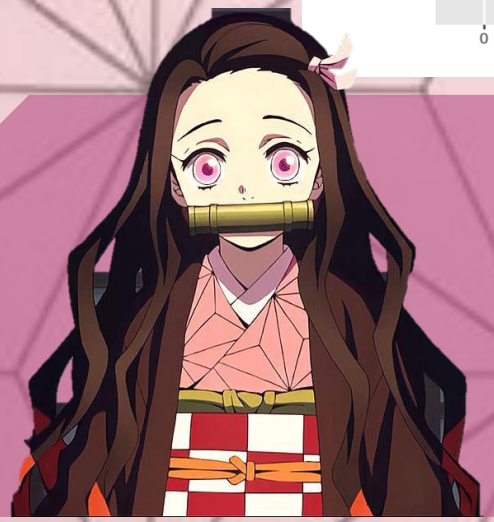
全集中回顧



發燒影片最常見的類型為「娛樂」類別影片

全集中回顧



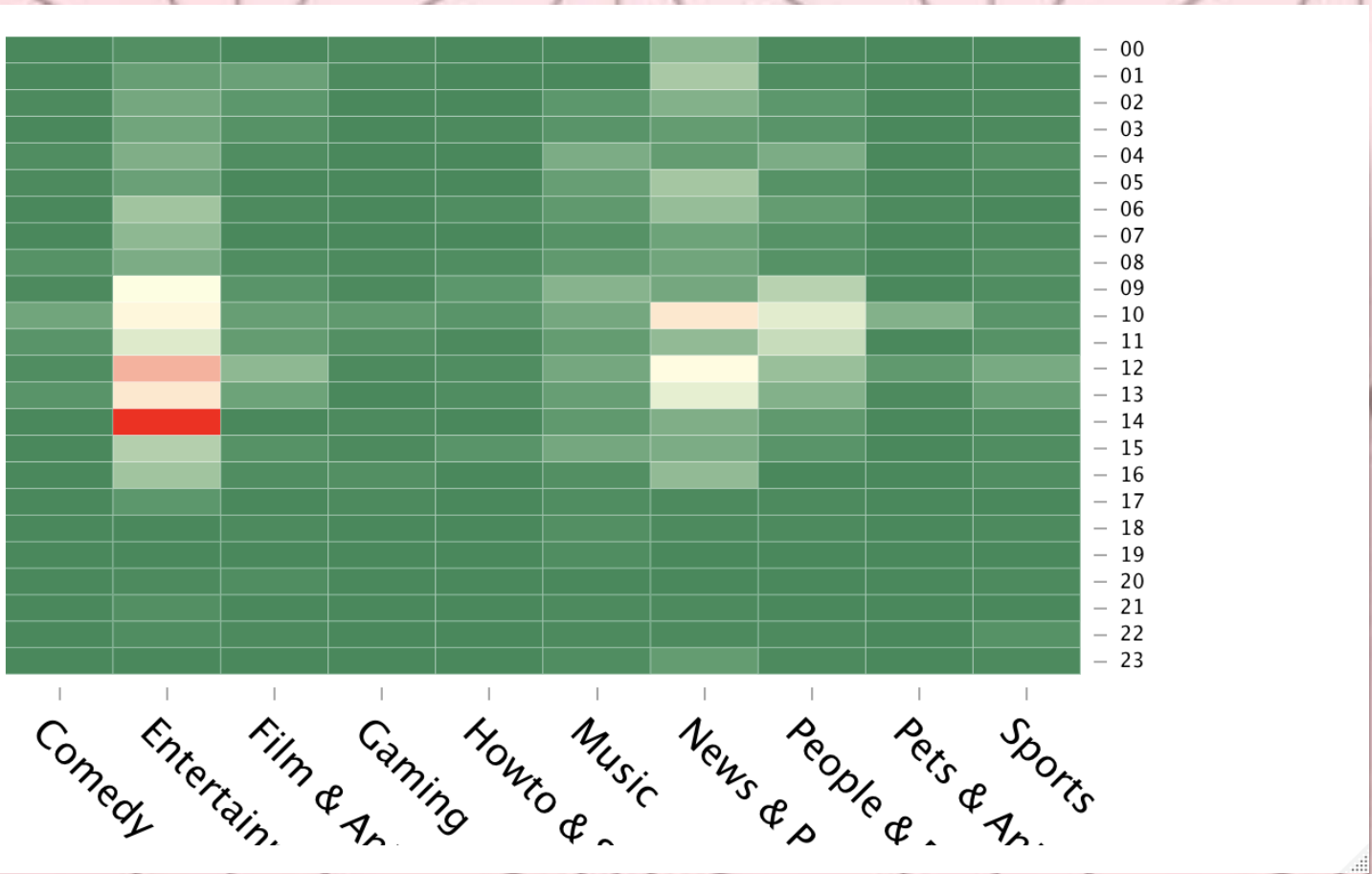


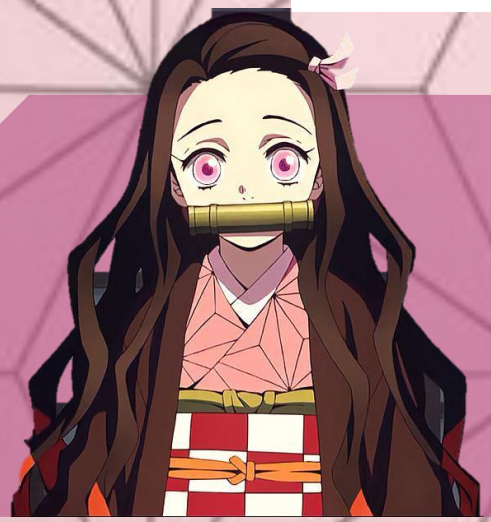
觀看和喜歡數最多的類別
第一為「音樂」其次是「娛樂」

全集中回顧

娛樂類型影片的標籤關鍵字

全集中回顧





影片投放時間
娛樂類別介在9:00-15:00

全集中回顧

根據上述得知，娛樂型影片為現今台灣Youtube主流
因此決定以娛樂型YouTuber為目標

第四話

特徴工程

きめつのやいば
鬼滅之刃
YouTube篇

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function | Addins

tw

Filter

category_Autos & Vehicles	category_Comedy	category_Education	category_Entertainment	category_Film & Animation	category_Gaming	category_Howto & Style	category_Music	category_News & Politics
0	0	0	0	1	0	0	0	
0	0	0	0	1	0	0	0	
0	0	0	0	1	0	0	0	
0	0	0	0	1	0	0	0	
0	0	0	0	1	0	0	0	
0	0	0	0	1	0	0	0	
0	0	0	0	1	0	0	0	
0	0	0	0	1	0	0	0	
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0	0	0	0	1	0	0	0	
0	0	0	0	1	0	0	0	
0	0	0	0	1	0	0	0	
0	0	0	0	1	0	0	0	
0	0	0	0	1	0	0	0	
0	0	0	0	1	0	0	0	
0	0	0	0	1	0	0	0	
0	0	0	0	1	0	0	0	
0	0	0	0	1	0	0	0	

資料轉換 — One Hot encoding

將各欄位數據壓縮成0與1的值

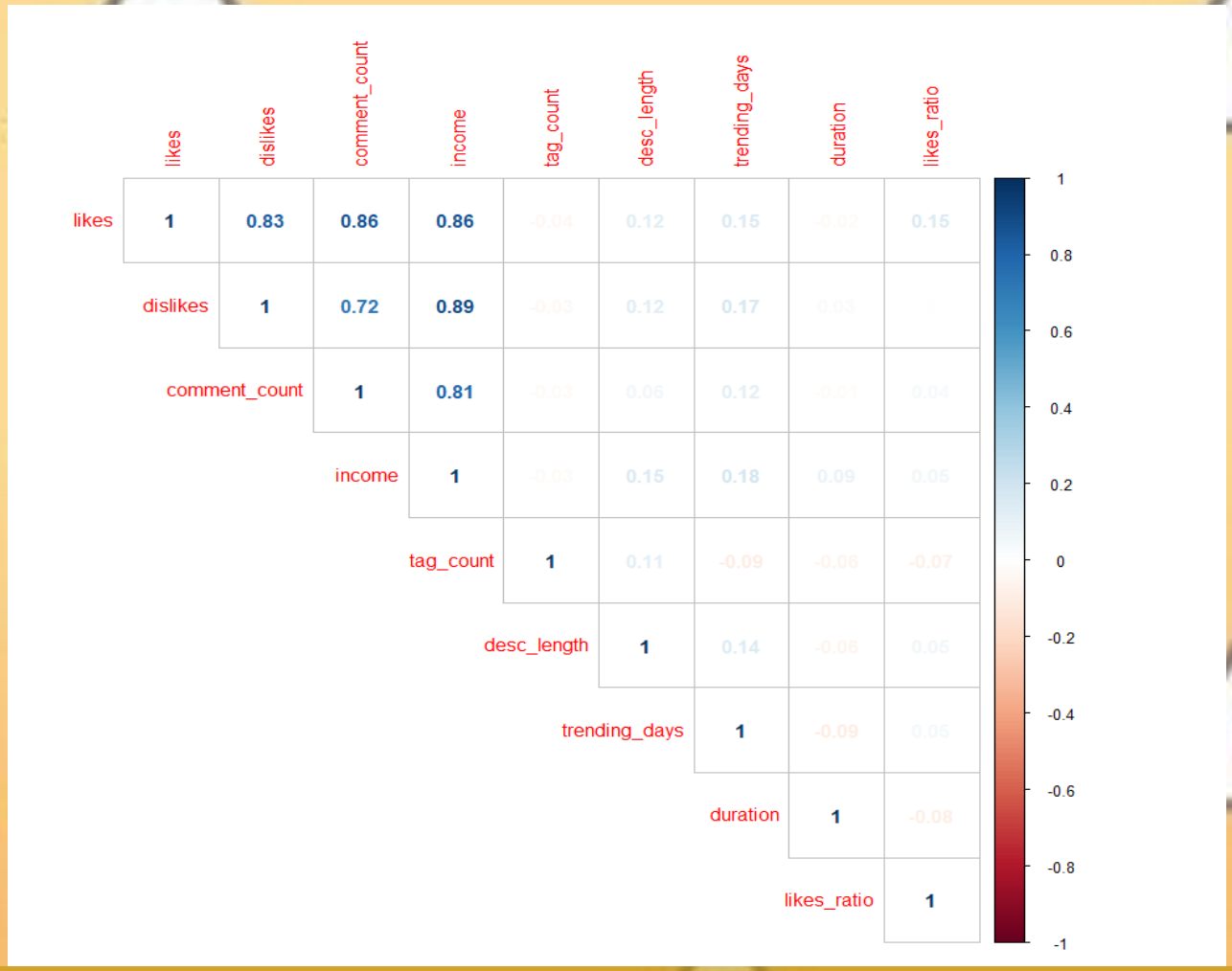
After

video_id	categoryId	likes	dislikes	comment_co	tag_count	desc_length	trending_day	duration	income	likes_ratio
#NAME?	0.77777778	0.00027439	0.00065297	9.95E-05	0.5248227	0.04764957	0	0.0031572	80.417	32.4554455
-4ni0pcKZ4v	0.33333333	0.02313749	0.01843172	0.00443195	0.0141844	0.11175214	0.3125	0.0004432	1241.50219	96.9515959
-5q5mZbe3V	0.33333333	1	1	1	0.04255319	0.2957265	1	0.00050031	104918.03	77.233309
-607OwI4gP	0.33333333	0.00348482	0.00341999	0.00065326	0.26241135	0.32457265	0.3125	0.00048889	816.89689	78.6975425
-6zExiuIotU	0.85185185	0.00895921	0.01049916	0.00132233	0.41843972	0.05811966	0.1875	0.00058712	1436.90252	65.9051724
-8YXCsxF2t	0.59259259	4.44E-06	1.29E-05	1.86E-06	0.07092199	0.16153846	0.125	0.01395609	9.35563	26.5
-9cZ3pt3v28	0.88888889	0.00145676	0.00455136	0.00062211	0.4751773	0.03119658	0.5625	0.00701117	278.86055	24.7201705
#NAME?	0.77777778	0.00092865	0.00380142	0.00083645	0.06382979	0.08461538	0.9375	0.01320449	870.03937	18.8673469
#NAME?	0.85185185	0.00240843	0.00435095	0.00031291	0.29787234	0.34252137	0.8125	0.00199438	933.60774	42.7518574
#NAME?	0.59259259	4.57E-05	5.82E-05	3.72E-05	0.07092199	0.16645299	0.375	0.00171338	44.09719	60.6666667
#NAME?	0.85185185	0.00031382	0.00104733	5.39E-05	0.06382979	0.02606838	0.375	0.00226167	305.26718	23.1419753
#NAME?	0.77777778	0.00079028	0.00223689	0.0002348	0.20567376	0.15641026	0.1875	0.00435428	428.27628	27.2861272
#NAME?	0.77777778	2.94E-05	0.00012284	8.83E-06	0.07092199	0.10320513	0.125	0.00177507	24.57586	18.4736842
#NAME?	0.85185185	0.08769065	0.05909012	0.02024876	0.14184397	0.31901709	0.4375	0.00162657	7950.54736	114.615427
#NAME?	0.92592593	6.79E-05	0.00138998	6.51E-05	0.04964539	0.02692308	0.25	0.00144838	52.89468	3.77209302

正規化—區間壓縮呼吸

將各欄位數據壓縮成[0,1]的值

變數挑選—相關性分析



- **income**
  "likes","dislikes","comment_count","desc_length"
  "trending_days","duration" ,"category"
- **like_ratio**
  "likes","comment_count","desc_length","trending_days","duration"

第五話

模型建立

income

線性迴歸

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)     -197.9       71.9  -2.752  0.00601 **
likes          37723.0     3384.6  11.145  < 2e-16 ***
dislikes       52472.2     1742.6  30.111  < 2e-16 ***
comment_count   7189.9      9174.0   0.784  0.43337
desc_length      904.3       293.6   3.080  0.00212 **
trending_days    589.1       201.6   2.923  0.00354 **
duration       11917.3       932.4  12.782  < 2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1322 on 1107 degrees of freedom
Multiple R-squared:  0.7722,    Adjusted R-squared:  0.771
F-statistic: 625.5 on 6 and 1107 DF,  p-value: < 2.2e-16
```

將先前相關性分析挑出的變數進行lm
Train data的MAE為421.4979
Test data的MAE為522.2996

```
Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)    65.09      42.06   1.548    0.122
likes       40554.46    2759.96  14.694   <2e-16 ***
dislikes    53588.86    1686.87  31.768   <2e-16 ***
duration    11427.92     931.35  12.270   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1333 on 1110 degrees of freedom
Multiple R-squared:  0.7679,    Adjusted R-squared:  0.7673
F-statistic:  1224 on 3 and 1110 DF,  p-value: < 2.2e-16
```

income

線性迴歸

根據p-value值選擇較顯著的變數進行lm
Mae降低為402.898

線性迴歸

	Overall	IncNodePurity
likes	8.767801	5439774413
dislikes	32.270810	5085354768
comment_count	13.021173	4573992624
tag_count	1.045274	211391607
desc_length	4.993988	396274754
trending_days	3.540197	2391633027
duration	9.436379	981393830
likes_ratio	1.862116	418092068

在進行increased node purity了解變數貢獻度
經過變數挑選後，Mae降為368.0525

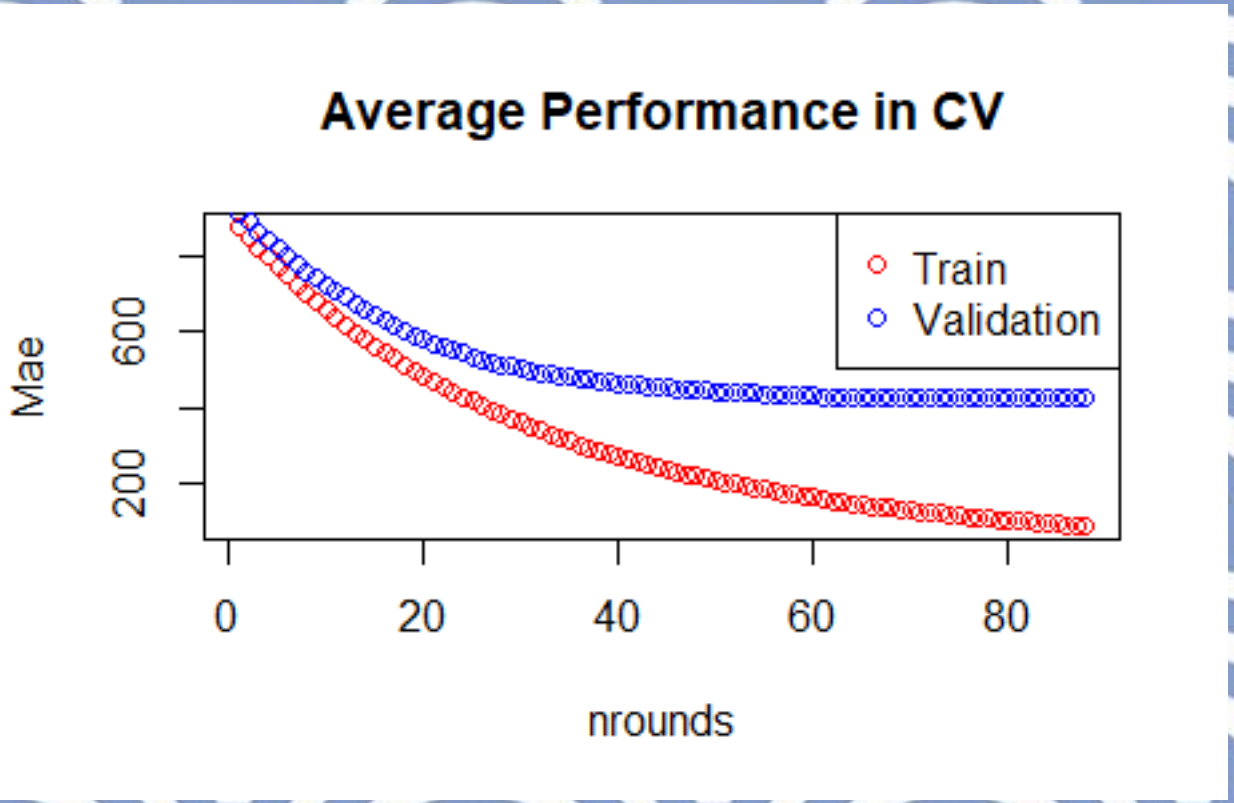
隨機森林

```
> rg_model = ranger(income ~ likes+dislikes+comment_count+desc_length+trending_days+duratio
n , data = train , num.trees = 450 , mtry = 4)
> Mae(train$income , rg_model$predictions)
[1] 327.3853
>
> rg_model2 = ranger(income ~ likes+dislikes+comment_count+trending_days , data = train , n
um.trees = 450 , mtry = 4)
> Mae(train$income , rg_model2$predictions)
[1] 347.6675
```

上面為相關性分析，下面為importance挑選出來的變數

XGBOOST

接著做XGboost，將資料拆為70%訓練集，30%測試集
其中70%訓練集拆分為70%真訓練集，30%真驗證集



接著利用得到的nrounds進行建模
得到的training MAE為131.3754
Validation MAE為493.9305
Testing MAE為216.3893

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)     51.336      4.228  12.142  < 2e-16 ***
likes         1438.085    185.576   7.749 2.08e-14 ***
comment_count -1838.976    521.994  -3.523 0.000444 ***
desc_length       5.230     17.279   0.303 0.762180
trending_days    -1.392     11.823  -0.118 0.906284
duration       -147.944     54.097  -2.735 0.006341 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 77.92 on 1108 degrees of freedom
Multiple R-squared:  0.07092,   Adjusted R-squared:  0.06673
F-statistic: 16.92 on 5 and 1108 DF,  p-value: 3.851e-16
```

Likes_ratio

線性迴歸

先利用相關性分析挑選出變數進行lm
Train data的MAE為43.31301
Test data的MAE為38.84577

線性迴歸

```
> new_lm_video_likes = lm(likes_ratio ~ likes +comment_count, data = train)
> MAE(train$likes_ratio,predict(new_lm_video_likes,train))#43.41737
[1] 43.41737
```

再根據p-value值挑選變數，Mae為43.41737

	Overall	IncNodePurity
likes	11.8839347	1964749.0
dislikes	8.0437235	1819494.7
comment_count	7.2336503	1081735.3
tag_count	3.0164335	499612.5
desc_length	1.0220830	585198.4
trending_days	0.6456846	246208.1
duration	2.9569168	896577.0
income	1.8621165	1001190.8

Likes_ratio

線性迴歸

再進行increased node purity了解變數貢獻度
經過變數挑選後進行lm，Mae降為42.20999

隨機森林

```
> rg_model = ranger(likes_ratio ~ likes+comment_count+desc_length+trending_days+duration
 data = train , num.trees = 400 , mtry = 4)
> Mae(train$likes_ratio , rg_model$predictions)#36.52196
[1] 36.52196
> rg_model1 = ranger(likes_ratio ~ likes +dislikes+comment_count+income , data = train ,
m.trees = 400 , mtry = 4)
> Mae(train$likes_ratio , rg_model1$predictions)#7.171722
[1] 7.171722
```

上面為相關性分析
下面為importance挑選出來的變數

等等，以為這樣就結束了嗎？

想完成任務的話，先通過我這一關吧

最終章

上弦之三ー

藝窩座

きめつのやいば

鬼滅之刃

YouTube篇

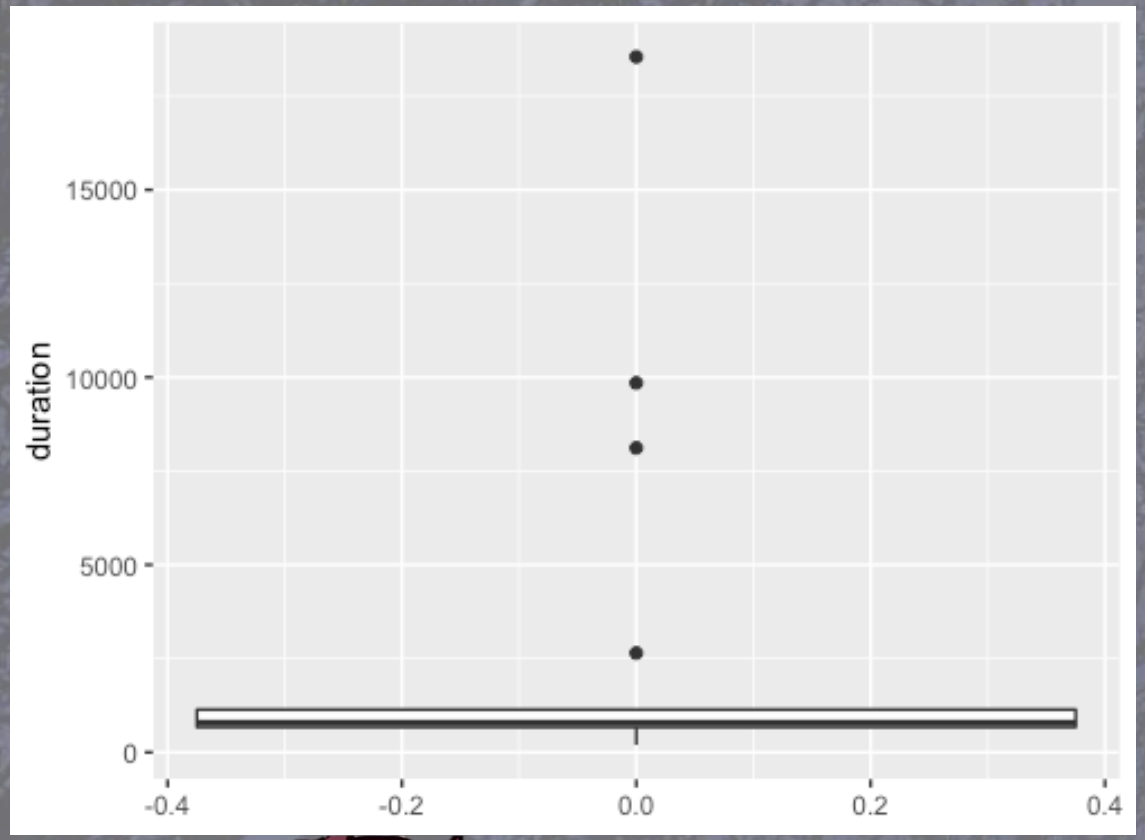
是上弦之三藝窩座噎！！！！
他要我們分析他那沒有破1000訂閱、
觀看時數不足4000小時的頻道
炭治郎現在該怎麼辦？

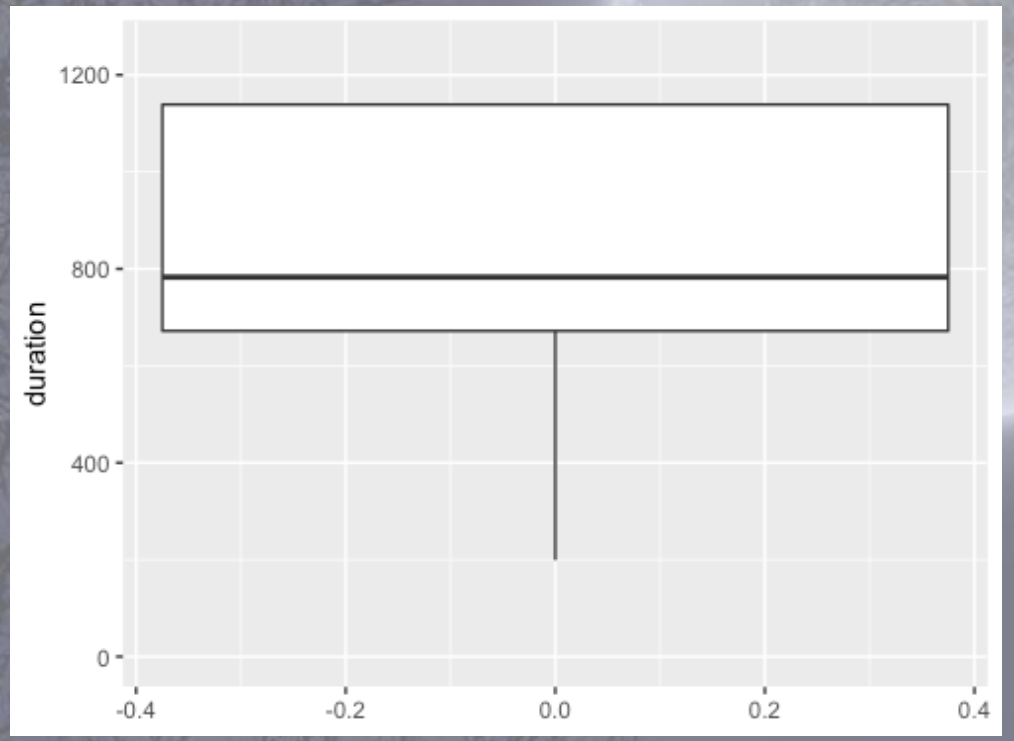
變數挑選

	likes	dislikes	comment_count	income	tag_count	desc_length	trending_days	duration	likes_ratio
likes	1	0.55	0.42	0.43	-0.53	0.4	0.67	-0.52	0.32
dislikes		1	0.86	0.69	-0.34	0.42	0.7	-0.36	-0.41
comment_count			1	0.56	-0.19	0.15	0.46	-0.34	-0.21
income				1	-0.32	0.17	0.63	-0.46	-0.51
tag_count					1	-0.12	-0.41	0.02	0.21
desc_length						1	0.39	-0.44	-0.12
trending_days							1	-0.53	-0.2
duration								1	-0.09
likes_ratio									1

別擔心，利用台灣熱門影片中的「Education」類別
找出影響該類別受歡迎及觀看量的變數供藝窩座參考
並且針對該方向進行改善就好

影片時長





影片時長與觀看量呈高度負相關
將教育類熱門影片時長進行平均
取平均前去除離群值
得出時間為800秒左右

建議：藝窩座將影片時長控制在13分鐘內

文字雲

像這個就是台灣Education類別熱門影片標籤的文字雲分析
發現標籤中皆包含該教育影片內容的主軸

建議：將影片加上R語言或R的tag
或是youtuber的名字直接用本名：藝窩座

影片縮圖

將教育類影片中點擊最高的縮圖取出
縮圖特徵皆包含人像、影片內容概述
建議：藝窩座請不吝展現帥氣的臉蛋
並在縮圖中加入簡短聳動的影片主題

太棒了！這樣任務就算順利結束了吧～

等等，你們忘記最重要的一件事情了

Unit 1 - Introduction to R and RStudio

觀看次數：2,123次 • 2018年5月8日

32 1 分享 儲存 ...

Yihuang Kang
232 位訂閱者

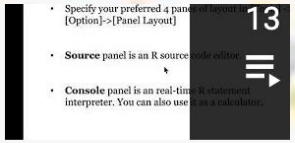
訂閱

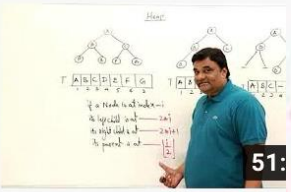
Unit 1 - Introduction to R and RStudio

1 則留言 排序依據

使用以下身分發布公開留言：**Kuan Wei Liao**

Mariuswu Yo 10 個月前
老师课程很好，为什么没有更新了





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